

I claim

1. A variable resistance exercising device using a rod moveable in an exercising direction and a plurality of extension springs selectively deployable to resist movement of the rod in the exercising direction, the device comprising:
 - a. a plurality of links interconnectable with the springs and arranged around the rod;
 - b. a dedicated one of the links being connected to the rod to move with the rod;
 - c. a remainder of the links being arranged in a stack extending from the connected link toward a base in a direction opposite to the exercising motion;
 - d. each of the springs having a fixed end connected to the base and a moveable end operatively connected to one of the links;
 - e. the remaining links being formed to allow springs to pass through a link nearer to the base to reach a link arranged farther from the base;
 - f. each of the remaining links having a hole, and the rod having a series of holes registering with the link holes when the rod is in a home position;
 - g. a pin insertable through any one of the link holes into a corresponding rod hole to pin any one of the remaining links to the rod; and
 - h. any link disposed in the exercising direction from a pinned link being moved with the rod when the rod moves in the exercising direction, and any link disposed on a base side of a pinned link remaining in place when the rod moves in the exercising direction so that selecting the link to be pinned to the rod also selects the number of extension springs that are deployed to resist movement of the rod in the exercising direction without requiring any change in spring end connections.

2. The exercising device of claim 1 wherein each of the remaining links has a spring connection that can be oriented in a different position relative to the rod when the remaining links are assembled in the stack so that a single form of link can supply several
5 different spring connection positions.

3. The exercising device of claim 2 wherein each of the remaining links are formed as an extrusion.

4. The exercising device of claim 1 wherein the springs connected to the remaining links are extended to bias the remaining
10 links toward the base while the remaining links remain in the stack.

5. A method of selecting different numbers of extension springs to resist movement of a rod as it moves in an extending direction, the method comprising:

- a. operatively connecting each of the extension springs between a base and one of a plurality of links arranged around the rod;
- b. selectively attaching one of the links to the rod; and
- c. moving the rod to extend with the rod any spring connected to the attached link and to any link on an extending
20 direction side of the attached link, and not to extend with the rod any spring attached to any link on a base side of the attached link.

6. The method of claim 5 including inserting a pin through a hole in a link and into a registered hole in the rod as the means for
25 selectively attaching one of the links to the rod.

7. The method of claim 5 including positioning the rod at a home position closest to the base when selectively attaching one of the links to the rod.

8. The method of claim 5 including fixing to the rod a
30 dedicated one of the links positioned furthest from the base.

9. The method of claim 5 including arranging springs to pass through links nearer to the base to reach links farther from the base.

10. The method of claim 5 including arranging the links in a stack around the rod extending away from the base in the extending direction.

5 11. A spring deployment selector using a rod moveable in an exercising direction and a plurality of springs extendable in the exercising direction to resist movement of the rod, the selector comprising:

- 10 a. the springs being connected between a fixed object and a plurality of links arranged in a stack around the rod;
- 15 b. the links being selectively attachable to the rod when the rod is in a home position; and
- 20 c. attachment of one of the links to the rod determining which of the links in the stack move with the rod in the exercising direction and which of the links in the stack do not move with the rod in the exercising direction, so that a number of springs deployed to resist movement of the rod in the exercise direction is determined by the link selected for attachment to the rod, without changing any spring end connections.

12. The selector of claim 11 wherein movement of the rod is guided through the stack.

25 13. The selector of claim 11 wherein the variable links have holes, the rod has a series of holes that in a home position align with the link holes, and a pin is insertable through a hole in a selected link and into the rod to attach a selected link to the rod.

14. The selector of claim 11 wherein the variable links are configured to allow springs to pass through links nearer to the fixed object to reach links farther from the fixed object.

30 15. The selector of claim 11 wherein the links have a spring connection that can be oriented in different positions as the links are arranged in the stack.

16. A plurality of spring links combined with a plurality of springs and a rod moveable in a resisted direction, the combination comprising:
- 5 a. the links having holes and the rod having a corresponding plurality of holes registered with the link holes in a home position of the rod;
 - b. a pin insertable through a link hole and into a rod hole to selectively attach one of the links to the rod; and
 - c. the springs being operatively connected between the links and a fixed object so that connecting one of the links to the rod determines which of the links move with the rod in the resisted direction and thereby establishes which of the springs resist movement of the rod.
17. The combination of claim 16 wherein the links are arranged
15 in a stack around the rod.
18. The combination of claim 16 wherein the links are formed as extrusions that can be arranged in different orientations around the rod.
19. The combination of claim 16 wherein the links are configured to allow a spring to pass through a link to reach another link.
20
20. A variable spring resistance assembly using a plurality of springs and comprising:
- 25 a. each of the springs having fixed ends connected to a fixed retainer and having moveable ends connected to a series of stacked and moveable links;
 - b. a rod extending through the moveable links and being moveable in a resisted direction; and
 - 30 d. the moveable links being selectively connectable to the rod so that the link connected to the rod determines the portion of the link stack that moves with the rod in the resisted direction and thereby determines that the springs connected to the moving portion of the link stack will resist movement of the rod in the resisted direction.

21. The resistance assembly of claim 20 wherein the springs are extended between the fixed retainer and the link connections and thereby bias the link stack in a home position.

22. The resistance assembly of claim 20 wherein holes extend 5 through links in the stack and register with holes in the rod in a home position of the rod, and a pin insertable through a link hole and into a rod hole attaches the selected link to the rod.

23. A spring resistance assembly deploying different numbers 10 of springs to resist movement of a rod, the spring assembly comprising:

- a. at least one of a plurality of springs being connected to the rod to provide basic resistance to movement of the rod; and
- b. the remaining plurality of springs being connected to a plurality of moveable end connectors that are selectively attachable to the rod so that without disconnecting or reconnecting any spring ends, different numbers of the remaining plurality of springs can be deployed to resist movement of the rod by means of varying the attachment 20 of moveable end connectors to the rod.

24. The spring assembly of claim 23 wherein the moveable end connectors are arranged in a stack around the rod so that attaching one of the end connectors to the rod determines what proportion of 25 the stack will move with the rod and be resisted by springs connected to the moveable portion of the stack.

25. The spring assembly of claim 23 including a pin and hole arrangement for selectively attaching one of the end connectors to the rod.

26. The spring assembly of claim 23 wherein the at least one 30 spring is connected to an end connector that is fixed to the rod.

27. The spring assembly of claim 23 wherein the end connectors are configured to allow springs to pass through one end connector to reach another end connector.